UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:			
Peter Malcolm Moran and Adrian Paul Burden		Art Unit:	2439
Appln. No.:	10/625,235	Examiner:	Homayounmehr, Farid
Filing Date:	July 22, 2003	Atty. Docket:	VJP-1080-US
For:	*A Method of Identifying an Object And a Tag Carrying Identification Information*	Confirm. No.:	8617

APPEAL BRIEF

Commissioner for Patents
Mail Stop Appeal Brief
P.O. Box 1450
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Sir:

In response to the Office Action dated August 24, 2009 and subsequent to the Notice of Appeal filed on January 24, 2010, Applicants submit the following Appeal Brief.

CERTIFICATE OF TRANSMITTAL UNDER 37 C.F.R. 1.8

I hereby certify that this paper (along with anything referred to as being attached or enclosed) is being electronically filed via EFS-Web at the United States Patent and Trademark Office, on the date shown below.

22 April 2010 /Kristen Lemme/

Date of Deposit Kristen Lemme

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Real Party in Interest

The real party in interest in the case is the Agency for Science, Technology, and Research, Singapore, the assignee of record.

Related Appeals and Interferences

As of the filing date of this appeal brief there are no other appeals or interferences related to this case.

Status of the Claims

Claims 1-18, 23, 25-26, 29, and 31 are rejected and under appeal.

Claims 19-22, 24, 27-28, 30, and 32 are canceled.

Status of Amendments

No amendments were filed after the non-final rejection mailed Aug 24, 2009.

Summary of Claimed Subject Matter

The present invention provides a method of identifying an object having identification information (specification, p. 4, lines 31-32). The identification information is used to verify the identity of the object (p. 4, line 32 – p. 5, line 1). The method involves determining at least one characteristic of a magnetic field of at least a portion of a tag, thereby obtaining a first specific magnetic signal (p. 5, lines 2-5). The tag comprises a host material having a disordered plurality of pores on a surface thereof (p. 5, lines 5-6; p. 11, lines 25-26). The host material is at least substantially non-magnetic (p. 5, line 6). The tag also comprises a magnetic material positioned within at least some of the disordered plurality of pores after formation of said pores (p. 5, line 6-7; p. 11, lines 25-26). The specific magnetic signal providing identification information for the object represents the disorder of the plurality of pores (p. 5, lines 5-10; p. 8, lines 10-16). The method also involves storing signal information relating to said first specific magnetic signal, said stored signal information forming the identification information of the object (p. 5, lines 8-10).

In another aspect the present invention provides a method of producing a system for object identification (p. 5, lines 28-29). The method involves determining at least one characteristic of the magnetic field of at least a portion of a tag, thereby obtaining a first specific magnetic signal (p. 5, line 31 – p. 6, line 1). The tag comprises a host material having a disordered plurality of pores on a surface thereof (p. 6, lines 1-3; p. 11, lines 25-26). The host material is at least substantially non-magnetic (p. 6, line 2). The tag also comprises a magnetic material positioned within at least some of the disordered plurality of pores after formation of said pores (p. 6, line 1-3; p. 11, lines 25-26). The specific magnetic signal providing identification information for the object represents the disorder of the plurality of pores (p. 5, lines 5-10; p. 8, lines 10-16). The method also involves storing signal information relating to said first specific magnetic signal, said stored signal information forming the identification information of an object to be identified (p. 6, lines 4-6).

The present invention also provides a tag carrying identification information (p. 6, lines 22-23). The identification information is used to verify an object's identity (p. 6, line 23-24). The tag comprises a host material having a disordered plurality of pores on a surface thereof (p. 6, lines 24-25; p. 11, lines 25-26). The host material is at least substantially non-magnetic (p. 6, line 25). The tag also has a magnetic material positioned within at least some of the disordered plurality of pores after formation of said pores (p. 6, lines 25-26; p. 11, lines 25-26). The identification information for the object is a magnetic signal representing the disorder of the plurality of pores (p. 5, lines 5-10; p. 8, lines 10-16). The tag also has at least one coating layer covering at least partially a surface of the host material (p. 6, lines 24-28).

The present invention also provides an object having a tag carrying identification information (p. 7, lines 5-6). The identification information is used to verify the object's identity (p. 7, lines 6-8). The tag has a host material having a disordered plurality of pores on a surface thereof (p. 7, lines 8-9; p. 11, lines 25-26). The host material is at least substantially non-magnetic (p. 7, lines 8-9). The tag also has a magnetic material positioned within at least some of the disordered plurality of pores after formation of said pores (p. 7, lines 9-10; p. 11, lines 25-26). The identification information for the object is a magnetic signal representing the disorder of the plurality of pores (p. 5, lines 5-10; p. 8, lines 10-16). The tag also has at least one coating

layer covering at least partially a surface of the host material (p. 7, lines 10-12).

The present invention also provides a system for object identification (p. 7, lines 21-22). The system has a tag carrying identification information (p. 7, lines 22-23). The identification information is used to verify an object's identity (p. 7, lines 23-24). The tag comprises a host material having a disordered plurality of pores on a surface thereof (p. 7, lines 24-26; p. 11, lines 25-26). The host material is at least substantially non magnetic (p. 7, line 25). The tag also has a magnetic material positioned within at least some of the disordered plurality of pores after formation of said pores (p. 7, line 26-27; p. 11, lines 25-26). The identification information for the object is a magnetic signal representing the disorder of the plurality of pores (p. 5, lines 5-10; p. 8, lines 10-16). The system also involves a data storage medium for storing data corresponding to a magnetic signal obtained from at least a portion of the tag (p. 7, lines 30-32).

Grounds of Rejection to be Reviewed on Appeal

1. Whether claims 1-18, 23, 25-26, 29, and 31 are unpatentable under 35 U.S.C. 103(a) as being obvious over Suzuki (USP 5,972,438) in view of Ziolo (USP 4,264,648).

Argument

1. Rejection of claims 1-18, 23, 25-26, 29, and 31 as unpatentable under 35 U.S.C. 103(a) as being obvious over Suzuki (USP 5,972,438) in view of Ziolo (USP 4,264,648)

To establish a prima facie case of obviousness it is necessary to consider whether there was an apparent reason to combine known elements in the manner set forth in the claim at issue, and this analysis should be made explicit *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398; 127 S. Ct. 1727 (2007). Rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (*quoted approvingly* in *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398; 127 S. Ct. 1727 (2007)).

In determining the propriety of the Patent Office case for obviousness in the first instance, it is necessary to ascertain whether or not the reference teachings would appear to be

sufficient for one of ordinary skill in the relevant art having the reference before him to make the proposed substitution, combination, or other modification. *In re Linter*, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972). Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so. *In re Kahn*, 441 F.3d 977, 986, 78 USPQ2d 1329, 1335 (Fed. Cir. 2006) MPEP 2143.01.

Suzuki discloses a magnetic swipe card having a magnetic strip. The card has a non-magnetic base material and one or more magnetic layers placed on top of the base material (Col. 2, lines 14-18). At least one magnetic layer defines a coding layer containing pre-recorded identifier coding information (Col. 2, lines 19-21). In the device of Suzuki, the magnetic coding layer is overlayed onto a non-magnetic base material (Col. 6, lines 48-49). The material used for the magnetic coding layer can be made from a magnetic powder (Col. 8, lines 10-15). The powder is dispersed together with an additive such as a pigment, in a binder and applied on top of the base material (Col. 8, lines 15-20). In the device of Suzuki, information is encoded by a magnetic head with an external biasing magnetic field (Col. 7, lines 44-50). This means the particulate coding layer is exposed to a magnetic field pattern when the UV-curable resin is still wet and the low coercivity magnetic particles are still mobile within the UV-curable resin (Col. 3, lines 43-57). Suzuki uses bar-code type patterns serving as coding information, as represented by protrusions embedded in the adhesive layer and facing the base material (Col. 17, lines 10-14 and Fig. 23, structure 105a).

Ziolo discloses low specific gravity magnetic carrier materials for use in toners for electrostatic printing (abstract, Col. 2, lines 3-5). The low specific gravity carrier can be low density silicaceous particles, which are coated with a magnetic metal to provide electrostatographic carrier particles having a low bulk density and a high magnetic permeability (Col. 3, lines 63-68; Col. 4, lines 57-68). The particles are mixed with toner particles, resulting in reduced toner impaction levels (abstract). When mixed with the toner particles, the carrier particles enable the user to form a uniform and softer magnetic brush due to their very low bulk densities (Col. 4, lines 4-10). Ziolo discloses that the carrier materials can be mixed with finely-divided toner particles and employed to develop electrostatic latent images on any suitable

electrostatic latent image-bearing surface (Col. 7, line 66 - Col. 8, line 2).

The rejection alleges that it would have been obvious for a person of ordinary skill to use disordered pores in a non-magnetic substrate, which it alleges are taught by Ziolo, as the substrate for Suzuki's magnetic cards to embed the magnetic materials. (Office Action mailed 8/24/09, p. 5). The rejection further alleges the motivation would have been to benefit from the practical advantage that the magnetic material is well protected against abrasion (Office Action mailed 8/24/09, p. 5).

No Motivation is Present to Modify Suzuki

The rejection misapprehends the disclosures of both references. The motivation proposed by the rejection is clearly incorrect, as Suzuki already discloses that the magnetic substrate is not exposed to abrasion. Rather, it is protected underneath a protective layer. Suzuki states at Col. 8, lines 21-22 that the magnetic coding layer can be overlaid with a protective covering layer and offers multiple variations for accomplishing it. This is also clearly visible in Figure 17A, where structure 84 represents an adhesive layer, 85 represents the first magnetic layer, 86 a second magnetic layer, and 87 a protective covering layer, which is explained in further detail at Col. 11, lines 33-39. Therefore, there is no motivation to perform the radical modification proposed by the rejection, because Suzuki already solves the problem, and in a much more efficient way than the rejection proposes. The Supreme Court stated in *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007), that rejections based on obviousness grounds cannot be sustained by mere conclusory statements; instead there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. Here, a motivation has been stated, but it is clearly incorrect and inconsistent with the clear disclosure of the main reference. Thus, the rejection provides no rational underpinning for modifying Suzuki and for this reason alone no *prima facie* case of obviousness has been made.

The Rejection Relies on Impermissible Hindsight Reasoning, and Yet Still Fails to Arrive at the Claimed Invention

Furthermore, no *prima facie* case of obviousness has been established for the additional and independent reason that the rejection is based entirely on impermissible hindsight reasoning.

Ziolo discloses low specific gravity magnetic carrier materials for use in toners for electrostatic printing. The low density magnetic carrier particles of Ziolo are disclosed as being composed of "silicaceous materials including glass particles in various forms such as hollow glass beads, foam glass nodules, solid glass beads, microporous glass beads, glass chips, ceramic beads, sand, and porcelain." (Ziolo, Col. 5, lines 3-7). These particles are then coated with a magnetically-attractable transition metal, which covers or impregnates the silicaceous substrates. (Col. 4, lines 57-68). Ziolo directs that the magnetic metal deposit coating the particle should be "substantially continuous around the silicaceous bead or threaded through it." (Col. 5, lines 51-53). Thus, following the disclosure of Ziolo would not result in the claimed invention, which requires that magnetic material be "positioned within at least some of the disordered plurality of pores after formation of said pores." (Claim 1). The presently claimed invention does not use particles at all. Furthermore, making the magnetic material "substantially continuous around the silicaceous bead or threaded through it" according to Ziolo would destroy the distribution of the magnetic material within the disordered plurality of pores, which is an important feature in the achievement of the benefits offered by the present invention. The proposed combination would result in a mere covering or blending together of the pores. Thus the proposed modification would not even result in the claimed invention. The person of ordinary skill would not combine Ziolo with Suzuki since such a combination would offer no benefit.

The rejection also alleges that Col. 16, lines 1-36 of Suzuki discloses the creation of barcode type patterns in the substrate using the magnetic material, and that a bar code generates information signal based on the disordered patterns (Office Action mailed 8/24/09, p. 4, lines 5-7). But the patterns to which the Office Action refers do not relate to pores on the surface of a host material as required by the claims. Moreover, the distinguishing feature of such a pattern does not arise from disorder, but from the predetermined ordering of the pattern into the bar code.

The patterns of Suzuki are variable thicknesses in the magnetic material itself (see Col. 7, lines 4-11 and Fig 5). Any variance in the thicknesses in the magnetic material is not disordered, but instead is precisely ordered into "patterns such as letters." Identification information for the object on the tag does not represent the disorder of any plurality of pores, as recited in the

present claims. Instead, whatever information may be recorded thereon is a function of ordering magnetic material into "designed patterns, letters or bar code-type patterns." (Col. 2, lines 31-34).

The Office Action also refers to Fig. 23 of Suzuki (Office Action mailed 8/24/09, p. 4, line 4). Here again the host material is feature 101, which is not porous. This "base material 101" receives a magnetic coding stripe (Col. 16, lines 40-46). To record information on the coding stripe, "magnetic information is inputted on the transfer magnetic layer 111" through the use of ordinary magnetic recording means (Col. 16, lines 1-5) and whatever information is recorded on the coding stripe is purely a function of that initial magnetic recording on layer 111 (Col. 16, lines 22-34). No identification information for an object is representing disorder in any plurality of pores of the host material of the tag, as required in the present claims.

The Cited Art Does not Teach or Suggest the Claimed Invention

One helpful insight for assessing obviousness is to consider three basic criteria: first, whether there is some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; second, whether there is a reasonable expectation of success; and third, whether the prior art reference (or references when combined) teaches or suggests all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *KSR v. Teleflex Inc.*; *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). MPEP 2142. In the present case, neither Suzuki or Ziolo disclose the concept of making a disordered plurality of pores and filling at least some of the pores with a magnetic material, where a specific magnetic signal providing identification information represents the disorder of the plurality of pores. This concept cannot be derived from either reference or their (inappropriate) combination. Nor is it within the knowledge of the person of ordinary skill in the art. This concept is found only in Applicant's own disclosure. For this independent reason as well, no *prima facie* case of obviousness has been made.

Suzuki and Ziolo are Non-Analogous Art

The claims are not obvious for the additional and independent reason that Suzuki and Ziolo are non-analogous art and are therefore not properly combinable. The Federal Circuit has stated that a reference must be "reasonably pertinent to the problem addressed" to serve as analogous art. *In re ICON Health & Fitness*, 496 F.3d 1374; 2007 U.S. App. LEXIS 18244 (Fed. Cir. 2007). *See Also Princeton Biochemicals, Inc. v. Beckman Coulter, Inc.*, 411 F.3d 1332 (Fed. Cir. 2005) ("A reference is reasonably pertinent if, even though it may be in a different field of endeavor; it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem"). The rejection thus is based on legal error because it relies on Suzuki and Ziolo being analogous art, asserting that "both are directed to systems which use magnetic particles." (Office Action mailed 8/24/09, p. 5). But the problem addressed by the present invention is not to create a system that uses magnetic particles. The problem is to provide a system encoding data useful in identity authentication systems, which is an inexpensive tagging system that is impossible or prohibitively difficult and expensive to forge. Ziolo is directed towards providing low density carrier materials for mixture with toner for electrostatic printing and is not at all pertinent to addressing this problem. Ziolo is not a reference to which the person of ordinary skill would look in addressing the problem of creating an identity authentication system. Therefore, it is not analogous art and no *prima facie* case of obviousness has been established for this independent reason as well.

Modifying Suzuki According to Ziolo Changes the Principle of Operation of Suzuki

The claims are also not obvious over the cited art for an additional, independent reason. Modifying Suzuki according to Ziolo changes the principle of operation of Suzuki, and therefore the references are not sufficient to render the claims *prima facie* obvious. MPEP 2143.01 VI. Suzuki operates according to a principle of attaching a magnetic coding layer to a non-magnetic base material, where the magnetic coding layer contains magnetic particles dispersed in a binder (Col. 2, lines 14-25). The coding layer is exposed to a magnetic field pattern when the UV-curable resin is still wet and the low coercivity magnetic particles are still mobile within the UV-curable resin (Col. 3, lines 43-57). The coding information can be encoded as numerals, design

patterns, or letters (Col. 7, lines 22-25). Suzuki uses bar-code type patterns serving as coding information, as represented by protrusions embedded in the adhesive layer and facing the base material (Col. 17, lines 10-14 and Fig. 23, structure 105a). With reference to Fig. 23 of Suzuki, the information on the second magnetic layer (105) can be freely selected by selecting a magnetic pattern to be recorded on the transfer magnetic layer 111. Such information is useful as a finger print data (Col. 17, lines 28-33).

The rejection proposes using the porous material of Ziolo to form a non-magnetic layer, and then fill pores in the magnetic layer with magnetic metal. But such action would involve inventive work and would change the principle of operation of Suzuki from encoding numerals, design patterns or letters in a wet resin while the magnetic particles are still mobile, to a concept of reading the magnetic field created by the magnetic material being positioned within a disordered plurality of pores on the non-magnetic material. Besides the fact that utilizing a disordered plurality of pores with magnetic material positioned therein is not disclosed or suggested by either reference, such a change would also change the principle of operation of Suzuki. The CCPA has held that if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959); MPEP 2143.01 VI. In *Ratti*, the CCPA reversed an obviousness rejection because, as here the suggested combination of references required a substantial reconstruction and redesign of the elements shown in the primary reference, as well as a change in the basic principle under which the primary reference construction was designed to operate. 270 F.2d at 813, 123 USPQ at 352.). For this independent reason as well, no prima *facie case* of obviousness has been made.

Closing

In view of the above the Applicant respectfully requests that the rejections be reversed and that the claims be passed to allowance (or examination continued beyond the elected species).

Respectfully submitted

_____	_____
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Claims Appendix

1. A method of identifying an object having identification information, and wherein said identification information is used to verify the identity of the object, said method comprising:

(a) determining at least one characteristic of a magnetic field of at least a portion of a tag, thereby obtaining a first specific magnetic signal, wherein the tag comprises (i) a host material having a disordered plurality of pores on a surface thereof, said host material being at least substantially non-magnetic, and (ii) a magnetic material positioned within at least some of the disordered plurality of pores after formation of said pores, wherein the specific magnetic signal providing identification information for the object represents the disorder of the plurality of pores, and

(b) storing signal information relating to said first specific magnetic signal, said stored signal information forming the identification information of the object.

2. The method of claim 1, wherein the step of determining at least one characteristic of said magnetic field of the at least one portion of said tag comprises a measurement of said characteristic of the site specific magnetic field over a surface of said portion of the tag, thereby mapping a magnetic fluctuation signal.

3. The method of claim 1, wherein storing signal information relating to the first specific magnetic signal comprises storing data corresponding to the at least one characteristic of said magnetic field over said portion of the tag.

4. The method of claim 1, further comprising:

subsequently determining the at least one characteristic of the magnetic field of said portion of the tag, thereby obtaining a second specific magnetic signal, and comparing said second specific magnetic signal with the previously stored identification information.

5. The method of claim 4, further comprising:

magnetizing the tag prior to each determination of the at least one characteristic of the

magnetic field of said portion of the tag.

6. The method of claim 1, further comprising:

recording information on the tag by magnetizing the magnetic material present in groups of pores into poled domains, or patterning pores of the tag with magnetic material.

7. The method of claim 1, wherein the tag is attached to the object to be identified after obtaining the first specific magnetic signal.

8. The method of claim 1, wherein the tag is attached to the object to be identified before obtaining the first specific magnetic signal.

9. The method of claim 1, wherein the tag comprises a substrate supporting the host material.

10. The method of claim 9, wherein the substrate comprises material selected

from the group consisting of metal, silicon, silica, glass, plastic, ceramic and combinations thereof.

11. The method of claim 1, wherein the host material is selected from the group consisting of alumina, zeolites, group III-V materials, polymers, silicon oxide, zinc oxide and tin oxide.

12. The method of claim 1, wherein the host material comprises nanotubes.

13. The method of claim 12, wherein the nanotubes are cast within a second host material.

14. The method of claim 1, wherein the magnetic material is selected from the group consisting of Fe, Ni, Co, their alloys, oxides, mixtures and combinations thereof.

15. The method of claim 1, wherein the pores of the host material have a diameter between 100 nm to 500 nm.

16. The method of claim 1, wherein the tag further comprises at least one coating layer.

17. The method of claim 1, wherein said at least one characteristic of the magnetic field of the portion of the tag is highly dependent on the disorder of the tag.

18. The method of claim 17, wherein the disorder is due to a feature selected from the group consisting of pore size, shape and orientation of pores, percentage of pore filling, crystal orientation of magnetic material in the tag, and combinations thereof.

23. A method of producing a system for object identification, said method comprising:

(a) determining at least one characteristic of the magnetic field of at least a portion of a tag, thereby obtaining a first specific magnetic signal, wherein the tag comprises (i) a host material having a disordered plurality of pores on a surface thereof, said host material being at least substantially non-magnetic, and (ii) a magnetic material positioned within at least some of the disordered plurality of pores after formation of said pores, wherein the specific magnetic signal providing identification information for the object represents the disorder of the plurality of pores, and

(b) storing signal information relating to said first specific magnetic signal, said stored signal information forming the identification information of an object to be identified.

25. A tag carrying identification information, said identification information is used to verify an object's identity, said tag comprising:

(a) a host material having a disordered plurality of pores on a surface thereof, said host material being at least substantially non-magnetic,

(b) a magnetic material positioned within at least some of the disordered plurality of pores after formation of said pores, wherein the identification information for the object is a magnetic signal representing the disorder of the plurality of pores, and

(c) at least one coating layer covering at least partially a surface of the host material.

26. The tag of claim 25, wherein said coating layer comprises a material which has a bulk yield stress greater than 50 MN/m_2.

29. An object having a tag carrying identification information, said identification information is used to verify the object's identity, said tag comprising:

(a) a host material having a disordered plurality of pores on a surface thereof, said host material being at least substantially non-magnetic,

(b) a magnetic material positioned within at least some of the disordered plurality of pores after formation of said pores, wherein the identification information for the object is a magnetic signal representing the disorder of the plurality of pores, and

(c) at least one coating layer covering at least partially a surface of the host material.

31. A system for object identification, said system comprising:

(a) a tag carrying identification information, said identification information is used to verify an object's identity, wherein said tag comprises (i) a host material having a disordered plurality of pores on a surface thereof, said host material being at least substantially non magnetic, and (ii) a magnetic material positioned within at least some of the disordered plurality of pores after formation of said pores, wherein the identification information for the object is a magnetic signal representing the disorder of the plurality of pores, and

(b) a data storage medium for storing data corresponding to a magnetic signal obtained from at least a portion of the tag.

Evidence Appendix

None

Related Proceedings Appendix

None